



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,440	12/08/2003	Chandra Sekhar Namuduri	GP-303152	2250

7590 01/11/2005

KATHRYN A MARRA  
General Motors Corporation  
Legal Staff, Mail Code 482-C23-B21  
P.O. Box 300  
Detroit, MI 48265-3000

EXAMINER

BURCH, MELODY M

ART UNIT PAPER NUMBER

3683

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/730,440

Applicant(s)

NAMUDURI, CHANDRA SEKHAR

Examiner

Melody M. Burch

Art Unit

3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 5, 10, 15, 17 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-14, 16, 18-27, 29 and 31-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/8/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the electrorheological fluid claimed in claim 25 and the electrodes claimed in claim 26 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Election/Restrictions***

2. Applicant's election with traverse of Species I in the reply filed on 12/15/04 is acknowledged. The traversal is on the ground(s) that the election restriction is improper. This is not found persuasive because Applicant presents in the figures two or more distinct inventions. Examiner notes that Species I, II, III, and IV show different damper apparatus arrangements. Species I, II, and III differ in the structure of the damping mechanism and species IV differs from species II in the structure of the linear to rotary conversion structure. Applicant expressed an uncertainty as to whether the species correspond to only one, either, both, or none of the exemplary, alternative embodiments of linear to rotary translation elements. After reviewing Applicant's disclosure, it is clear particularly from lines 1-6 of paragraph [0025] that the linear to rotary translation element associated with figures 2-5 (species I-III) is the ball nut and ball screw. Figures 6 and 7 clearly indicate that they are associated with the rack and pinion linear to rotary conversion mechanism.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 5, 10, 15, 17, and 28 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/15/04. Claim 17 is directed to the Species II.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3683

5. Claims 2-9, 11-14, 16, 18-27, 29-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claims 2-9, 11-14, 16, 18-27, 29-32. The phrase "the damper" in the first line of the claims lack proper antecedent basis in the claims.

~~Re: claim 32. The phrase "between cylindrical core" is indefinite. The claim~~  
reads as if "cylindrical core" was not previously recited and that the core in the last line of the claim is distinct from the earlier recited core. Examiner recommends the use of such language as --between said cylindrical core--.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 6-9, 11-14, 16, 18, 20-22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4946131 to Weyand in view of US Patent 5878997 to Miesner.

Re: claims 1, 2, 7, and 12. Weyand shows in figure 1 a damping apparatus comprising: a linear to rotary conversion mechanism comprising a translatable member 10 that is adapted for generally linear translation in a forward and a reverse direction and a rotatable member 34 comprising a rotatable shaft that is rotatably coupled to the

Art Unit: 3683

translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively, and a damping mechanism comprising a hub 32 that is fixed to the shaft.

Weyand includes the limitation of damping by movement of the hub 32 through a viscous fluid 42 and discloses changing the viscosity of the fluid in col. 3 lines 4-5, but does not include the limitation of a means for generating a variable electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal that is representative of a desired damping force and a fluid having a viscosity that may be continuously varied by application of the electromagnetic field that is in touching contact with the hub, wherein application of the variable electromagnetic field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and translation of the translatable member.

Miesner teaches in figure 1 the use of a damper having a hub 40 and a means for generating a variable electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal representative of a desired damping force and a fluid 35 that is in touching contact with the hub wherein application of the variable electromagnetic field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and translation of the translatable member as taught in lines 5-7 of the abstract and in col. 4 lines 38-48.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the damping apparatus of Weyand to have included an automatic means of providing variable resistance to the movement of the hub, as taught by Miesner, in order to provide a means of adjusting the damping characteristics of the damper apparatus without manually altering the mechanical structure of the apparatus.

Re: claims 3, 8, 13, and 24. Weyand, as modified, teaches in Miesner the limitation wherein the means for applying an electromagnetic field is a coil as taught in col. 6 lines 1-4 of Miesner that is located proximate the hub as shown in figure 1 of Miesner and MR fluid as taught in lines 1-2 of the abstract of Miesner (the cylindrical disk in claims 24 and 33 is the cylindrical bottom surface of element 32).

Re: claims 4, 9, and 14. In an alternate interpretation Weyand, as modified, teaches in figure 2 of Weyand a translatable member 34 (34 undergoes a slight axial movement as disclosed in col. 2 lines 61-62 and a rotatable member 10 (member capable of being rotated along the threads) comprises a ball screw.

Re: claims 6 and 11. Weyand, as modified, describe the invention as set forth above in the rejection of claim 1 and also includes (as shown in figure 1 of Weyand) a housing 14 having a first end shown in the area of the lead line of number 48 with a bore that is adapted to rotatably receive the shaft therethrough, a sidewall 30 having an inner surface and a second end opposite the first end, the hub 32 having an outer surface proximate a portion of the inner surface of the sidewall such that the outer

Art Unit: 3683

surface of the hub and sidewall of the housing define a channel therebetween as shown in figure 1 of Weyand.

Re: claim 16. Weyand, as modified, teach in figure 1 of Weyand the limitation wherein the hub comprises a cylindrical base (the upper part of the hub) having an outer rim and that is fixed to the shaft (integrally fixed) and a cylindrical wall (the lower part of the hub) extending from the outer rim and located adjacent to the inner surface of the sidewall of the housing, wherein a first portion between the sidewall of the housing and the cylindrical wall of the hub comprises the channel.

Re: claims 18 and 22. Weyand, as modified, teaches in Miesner, the limitation wherein the cylindrical base or upper portion of the hub (where the coil 120 is not located) comprises a non-magnetic material (interpreting the absence of the coil as not having a magnetic material) and the cylindrical wall or lower portion of the hub comprises a magnetic material (where the coil 120 is located).

Re: claim 20. Weyand, as modified, teaches in Weyand the damper further comprising a cylindrical core 20 attached to the second end of the housing and extending along and adjacent to the cylindrical wall of the hub wherein a second portion between the cylindrical wall of the hub and the cylindrical core further comprises the channel as shown in figure 1.

Re: claim 21. Weyand, as modified, teaches in Miesner the limitation wherein the core 50 has a recess in an outer surface and the coil 120 is located within the recess. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the core of Weyand to have included a recess



Art Unit: 3683

with a coil, as taught by Miesner, in order to provide a means of ensuring that the electromagnetic field reaches the channel to change the viscosity of the fluid.

8. Claims 25-27, 29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4946131 to Weyand in view of US Patent 5878997 to Miesner as applied to claim 11 and further in view of US Patent 6740125 to Mosler.

~~Re: claims 25. Weyand, as modified, describes the invention substantially as set forth above, but does not include the limitation of the fluid being an ER fluid.~~

Mosler teaches in col. 4 line 5 the limitation of a damper including ER fluid. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fluid in the damper of Weyand, as modified, to have been ER fluid, as taught by Mosler, in order to provide an alternate means of varying the resistance within a damping system by altering the fluid viscosity.

Re: claim 26. Weyand, as modified, teach in col. 4 of Mosler the use of electrodes 12.

Re: claim 27. See the rejection of claim 14 above.

Re: claim 29. See the rejection of claim 16 above.

Re: claim 31. See the rejection of claim 20 above.

Re: claim 33. See the rejection of claim 24 above.

***Allowable Subject Matter***

9. Claims 19, 23, 30, and 32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Weyand fails

Art Unit: 3683

to show or suggest the presence of a lower seal and an upper seal as specifically arranged as required by claims 19, 23, 30, and 32.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6390252 to Namuduri et al. shows the use of a damper having MR fluid and US Patent 5233834 to Tsukamoto shows the use of a damper having electrodes generating an electric field.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 703-308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/730,440

Page 10

Art Unit: 3683

*mmb*  
mmb

January 5, 2005

*Melody M. Bruch*  
1/5/05